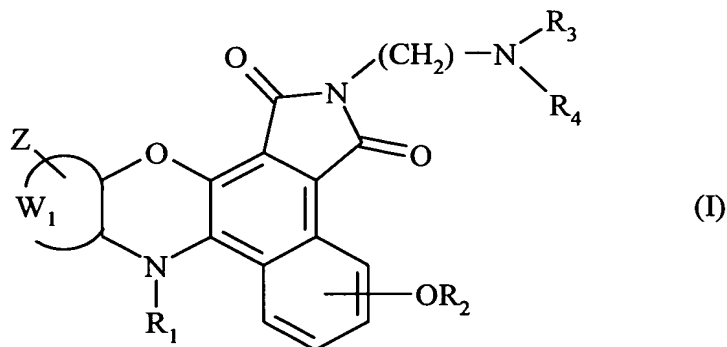


CLAIMS**1. Compounds of formula (I) :**

wherein :

- W_1 represents, with the carbon atoms to which it is attached, a phenyl group or a pyridyl group,
- Z represents a group selected from hydrogen, halogen, and the groups linear or branched (C_1-C_6) alkyl, aryl, aryl- (C_1-C_6) alkyl in which the alkyl moiety may be linear or branched, aryloxy, aryl- (C_1-C_6) alkoxy in which the alkoxy moiety may be linear or branched, hydroxy and linear or branched (C_1-C_6) alkoxy,
- R_1 represents a group selected from hydrogen and the groups linear or branched (C_1-C_6) alkyl, aryl, aryl- (C_1-C_6) alkyl in which the alkyl moiety may be linear or branched, $-C(O)-R_5$ and a linear or branched (C_1-C_6) alkylene chain, which are substituted by one or more identical or different groups selected from halogen and the groups cyano, $-OR_6$, $-NR_6R_7$, $-CO_2R_6$, $-C(O)R_6$ and $-C(O)-NHR_6$,

wherein:

- ⇒ R_5 represents a group selected from hydrogen and the groups linear or branched (C_1-C_6) alkyl, hydroxy, linear or branched (C_1-C_6) alkoxy, aryl, aryl- (C_1-C_6) alkyl in which the alkyl moiety may be linear or branched and aryloxy,
- ⇒ R_6 and R_7 , which may be identical or different, each represents a group selected from hydrogen and the groups linear or branched (C_1-C_6) alkyl, aryl and aryl- (C_1-C_6) alkyl in which the alkyl moiety may be linear or branched, or

$R_6 + R_7$ together form, with the nitrogen atom carrying them, a monocyclic heterocycle having 5 or 6 ring members and optionally containing in the ring system a second hetero atom selected from oxygen and nitrogen,

- R_2 represents a hydrogen atom or a group of formula $-\text{CH}_2\text{CH}_2\text{O}-R_8$ wherein :

5 R_8 represents a group selected from hydrogen and the groups linear or branched $(\text{C}_1-\text{C}_6)\text{alkyl}$, aryl, aryl- $(\text{C}_1-\text{C}_6)\text{alkyl}$ in which the alkyl moiety may be linear or branched, $-\text{S}(\text{O})_t-R_6$ (wherein R_6 is as defined hereinbefore and t represents an integer of from 0 to 2 inclusive) and T_1-R_9 (wherein T_1 represents a linear or branched $(\text{C}_1-\text{C}_6)\text{alkylene}$ chain and R_9 represents a group selected from halogen, cyano, $-\text{OR}_6$,
10 $-\text{NR}_6\text{R}_7$, $-\text{C}(\text{O})\text{H}$, $-\text{C}(\text{O})\text{OR}_6$ and $-\text{C}(\text{O})\text{NR}_6\text{R}_7$, wherein R_6 and R_7 are as defined hereinbefore),

- R_3 and R_4 , which may be identical or different, each represents, independently of the other, a group selected from hydrogen and the groups linear or branched $(\text{C}_1-\text{C}_6)\text{alkyl}$, aryl and aryl- $(\text{C}_1-\text{C}_6)\text{alkyl}$ in which the alkyl moiety may be linear or branched, or

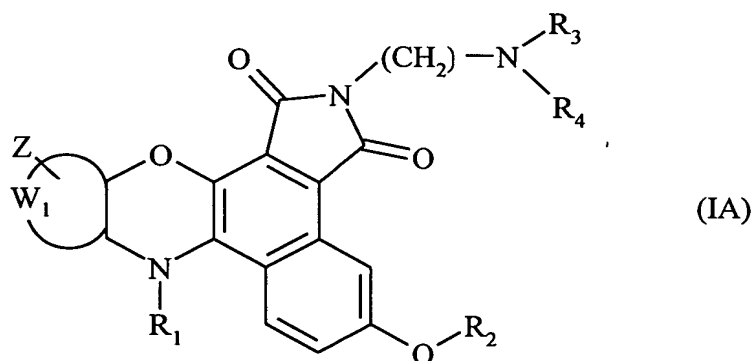
15 R_3 and R_4 together form, with the nitrogen atom carrying them, a monocyclic heterocycle having 5 or 6 ring members and optionally containing in the ring system a second hetero atom selected from oxygen and nitrogen,

- n represents an integer of from 1 to 6 inclusive,

20 their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base,

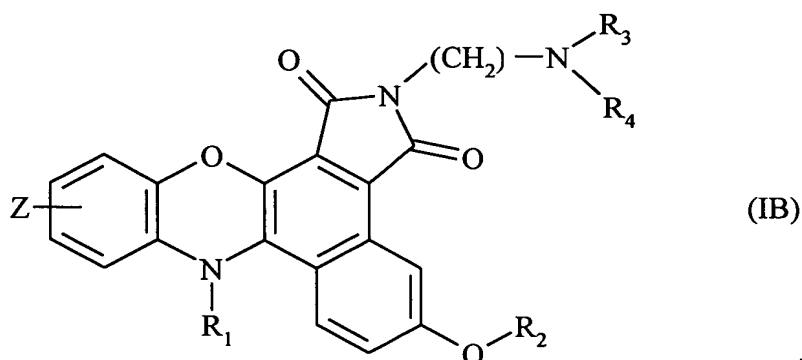
wherein "aryl" is to be understood as meaning a phenyl, naphthyl, dihydronaphthyl, tetrahydronaphthyl, indenyl or indanyl group, each of those groups being optionally substituted by one or more identical or different groups selected from halogen, linear or branched $(\text{C}_1-\text{C}_6)\text{alkyl}$, linear or branched $(\text{C}_1-\text{C}_6)\text{trihaloalkyl}$, hydroxy, linear or
25 branched $(\text{C}_1-\text{C}_6)\text{alkoxy}$, and amino optionally substituted by one or two linear or branched $(\text{C}_1-\text{C}_6)\text{alkyl}$ groups.

2. Compound of formula (I) according to claim 1, characterised in that they represent compounds of formula (IA) :



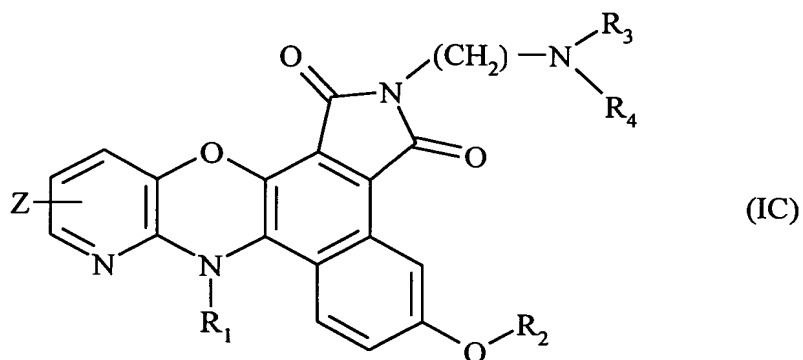
wherein R_1 , R_2 , R_3 , R_4 , W_1 , Z and n are as defined for formula (I), their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.

3. Compounds of formula (I) according to either claim 1 or claim 2, characterised in that they represent compounds of formula (IB) :



wherein R_1 , R_2 , R_3 , R_4 , Z and n are as defined hereinbefore, their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.

4. Compounds of formula (I) according to either claim 1 or claim 2, characterised in that they represent compounds of formula (IC) :



wherein R_1 , R_2 , R_3 , R_4 , Z and n are as defined hereinbefore, their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.

5. Compounds of formula (I) according to any one of claims 1 to 4, characterised in that Z represents a hydrogen atom, their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.
6. Compounds of formula (I) according to any one of claims 1 to 5, characterised in that R_1 represents a hydrogen atom or a $-C(O)-R_5$ group wherein R_5 represents more especially a hydrogen atom, their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.
7. Compounds of formula (I) according to any one of claims 1 to 6, characterised in that R_2 represents a hydrogen atom or a $-\text{CH}_2\text{CH}_2\text{O}-R_8$ group wherein R_8 represents more especially a hydrogen atom, their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.
8. Compounds of formula (I) according to any one of claims 1 to 7, characterised in that n represents an integer 2, their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.
9. Compounds of formula (I) according to any one of claims 1 to 8, characterised in that R_3 and R_4 , which may be identical or different, each represents independently of the other a linear or branched $(\text{C}_1\text{-C}_6)$ alkyl group, their enantiomers, diastereoisomers,

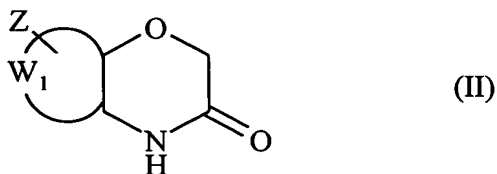
N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.

10. Compounds of formula (I) according to claim 1 which are :

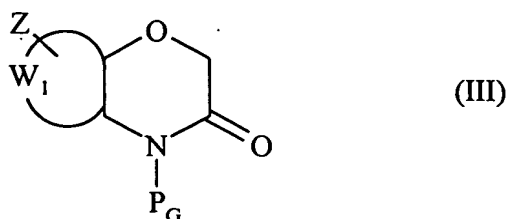
- 2-[2-(dimethylamino)ethyl]-5-hydroxybenzo[a]pyrrolo[3,4-c]phenoxazine-1,3-dione,
- 2-[2-(diethylamino)ethyl]-5-hydroxybenzo[a]pyrrolo[3,4-c]phenoxazine-1,3-dione,
- 2-[2-(dimethylamino)ethyl]-5-(2-hydroxyethoxy)-2,3-dihydrobenzo[a]pyrrolo[3,4-c]phenoxazine-8-carbaldehyde-1,3-dione,
- 2-[2-(dimethylamino)ethyl]-5-(2-hydroxyethoxy)benzo[a]pyrrolo[3,4-c]phenoxazine-1,3-dione,
- 2-[2-(dimethylamino)ethyl]-5-(2-hydroxyethylmethanesulphonate)-benzo[a]pyrrolo[3,4-c]phenoxazine-1,3-dione,
- 2-[2-(dimethylamino)ethyl]-5-(2-hydroxyethoxy)benzo[e]pyrido[2',3':5,6][1,4]-oxazino[3,2-g]isoindole-1,3-dione,

their enantiomers, diastereoisomers, N-oxide, and addition salts thereof with a pharmaceutically acceptable acid or base.

11. Process for the preparation of compounds of formula (I) according to claim 1, characterised in that there is used as starting material a compound of formula (II) :

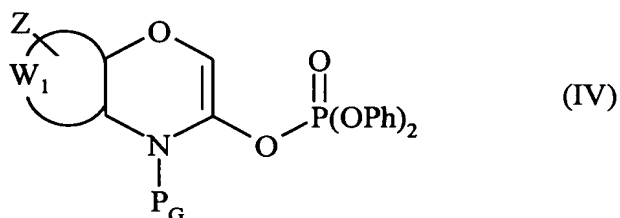


wherein W_1 and Z are as defined for formula (I), the amine function of which compound of formula (II) is protected by a protecting group P_G well known to the person skilled in the art to yield a compound of formula (III) :



wherein P_G represents a tert-butoxycarbonyl or phenoxy carbonyl group and W_1 and Z are as defined hereinbefore,

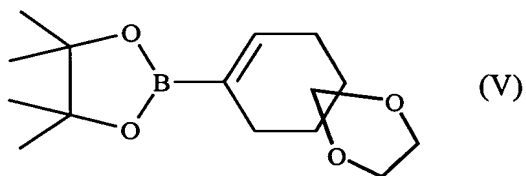
which compound of formula (III) is treated with lithium diisopropylamide followed by diphenyl chlorophosphate to yield a compound of formula (IV) :



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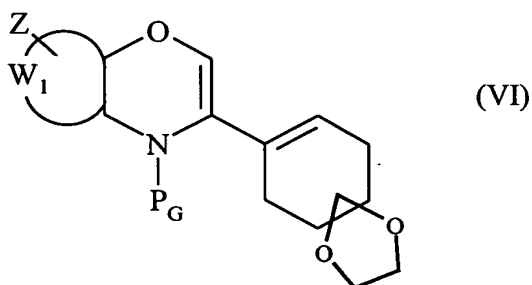
wherein P_G , W_1 and Z are as defined hereinbefore,

which compound of formula (IV) is treated, in the presence of bis(triphenylphosphine)palladium chloride, with a compound of formula (V) :



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to yield a compound of formula (VI) :

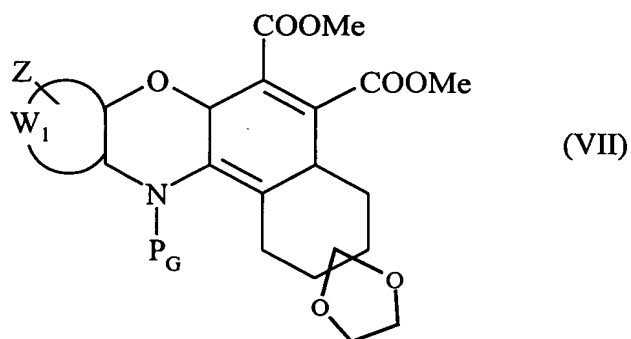


wherein P_G , W_1 and Z are as defined hereinbefore,

which compound of formula (VI) is :

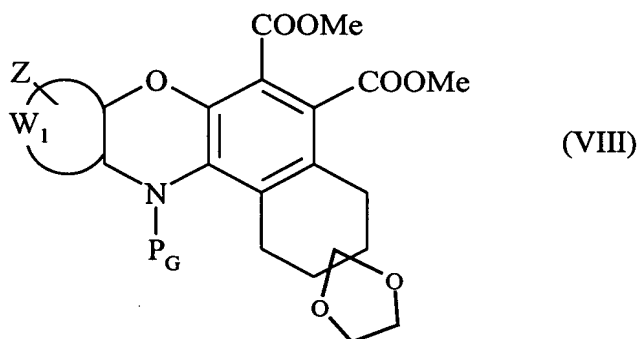
- either treated under an inert atmosphere with dimethyl acetylenedicarboxylate to yield a compound of formula (VII) :

15

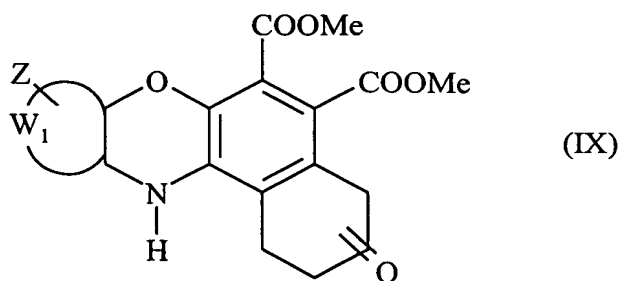


wherein P_G, W₁ and Z are as defined hereinbefore,
which compound of formula (VII) is :

- ◆ either treated with N-bromosuccinimide and benzoyl peroxide to yield a compound of formula (VIII) :

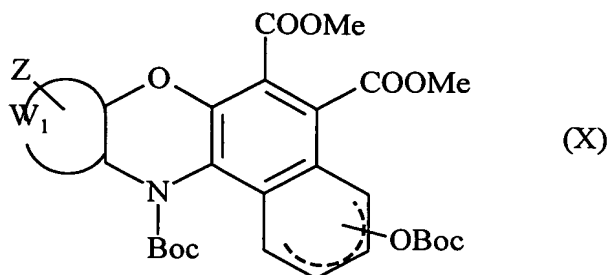


wherein P_G, W₁ and Z are as defined hereinbefore,
which compound of formula (VIII) is subjected to the action of hydrochloric acid to yield a compound of formula (IX) :

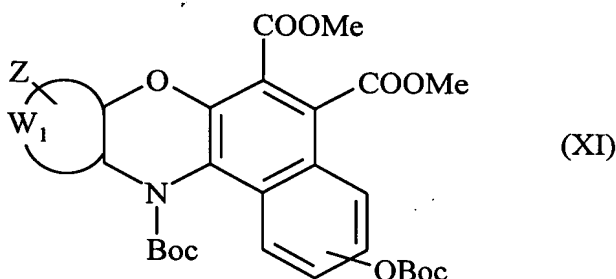


wherein W₁ and Z are as defined hereinbefore,

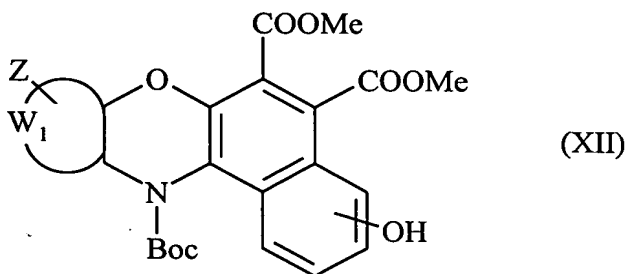
which compound of formula (IX) is subjected to the action of di-tert-butyl dicarbonate in the presence of 4-dimethylaminopyridine to yield a compound of formula (X) :



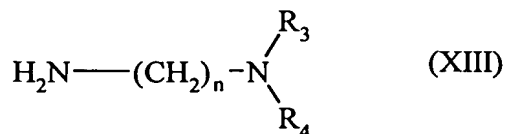
wherein represents a single or double bond, Boc represents a tert-butoxycarbonyl group and W₁ and Z are as defined hereinbefore, which compound of formula (X) is subjected to the action of 2,3-dichloro-5,6-dicyano-1,4-benzoquinone to yield a compound of formula (XI) :



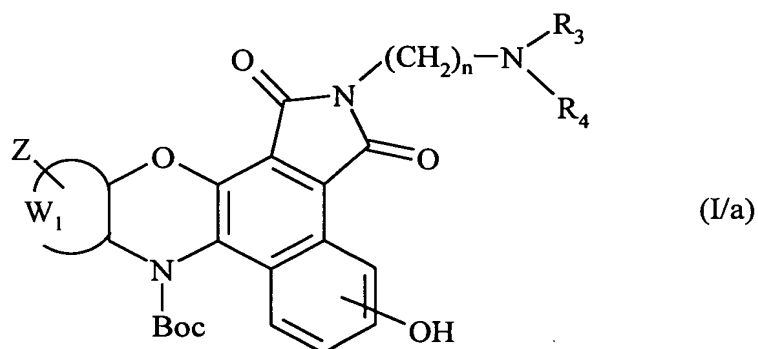
wherein Boc, W₁ and Z are as defined hereinbefore, which compound of formula (XI) is subjected to the action of sodium methanolate and is then hydrolysed to yield a compound of formula (XII) :



wherein Boc, W₁ and Z are as defined hereinbefore, which compound of formula (XII) is subjected to the action of a compound of formula (XIII) :

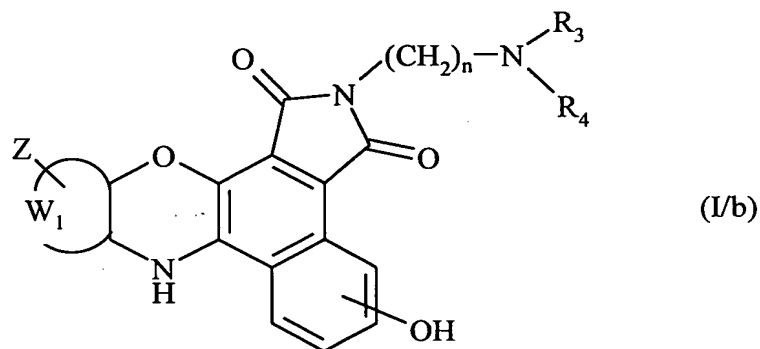


wherein R₃, R₄ and n are as defined for formula (I), to yield a compound of formula (I/a), a particular case of the compounds of formula (I) :



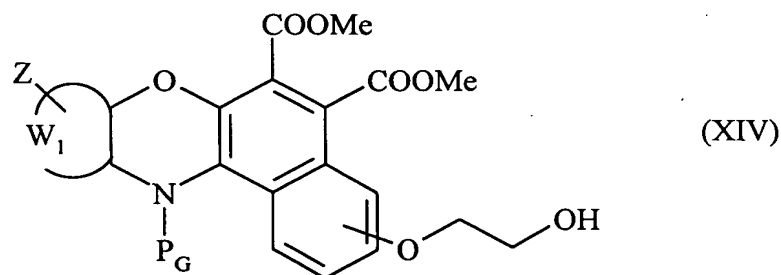
wherein Boc, R₃, R₄, W₁, Z and n are as defined hereinbefore,

which compound of formula (I/a) is optionally subjected to the same reaction conditions as the compound of formula (VIII) to yield a compound of formula (I/b), a particular case of the compounds of formula (I) :



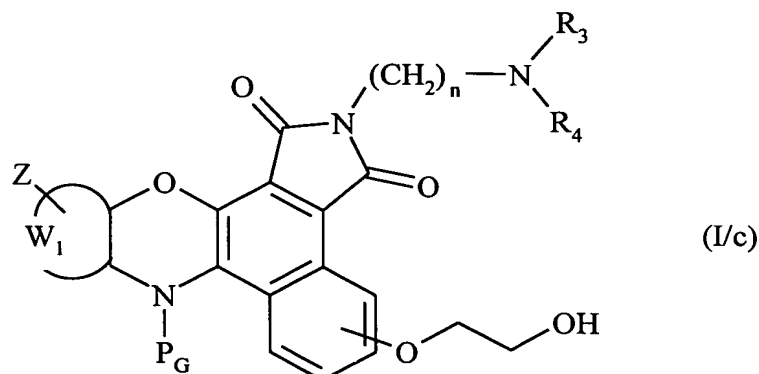
wherein R₃, R₄, W₁, Z and n are as defined hereinbefore,

♦ or subjected to the same reaction conditions as the compound of formula (X) to yield a compound of formula (XIV) :



wherein P_G, W₁ and Z are as defined hereinbefore,

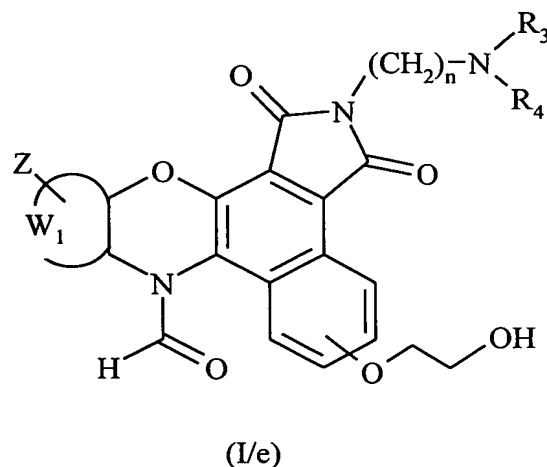
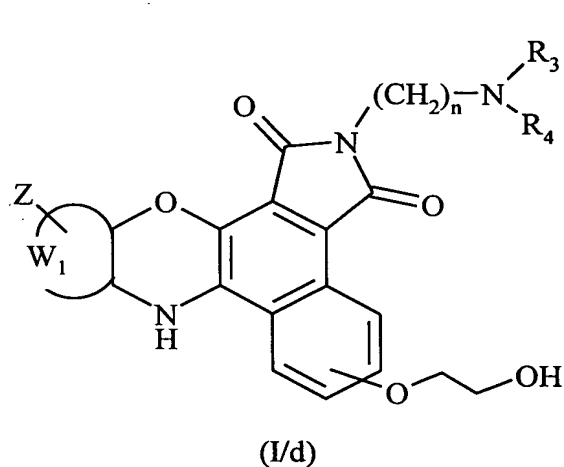
which compound of formula (XIV) is subjected to the same reaction conditions as the compound of formula (XII) to yield a compound of formula (I/c), a particular case of the compounds of formula (I) :



wherein P_G , R_3 , R_4 , W_1 , Z and n are as defined hereinbefore,

which compound of formula (I/c) is :

- either optionally subjected to the action of formic acid to yield compounds of formulae (I/d) and (I/e), particular cases of the compounds of formula (I) :

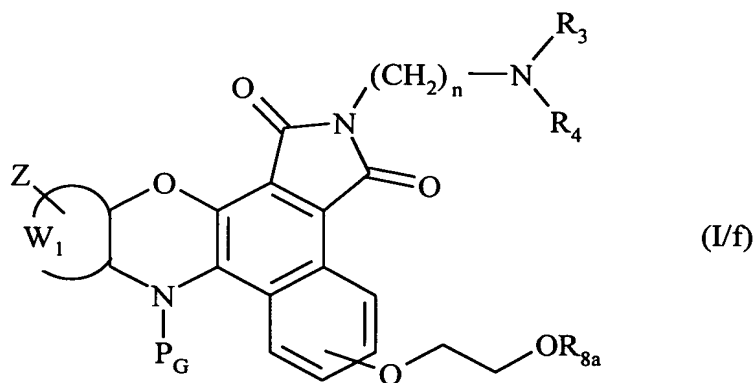


wherein R_3 , R_4 , W_1 , Z and n are as defined hereinbefore,

- or optionally subjected to the action of a compound of formula (XV) :

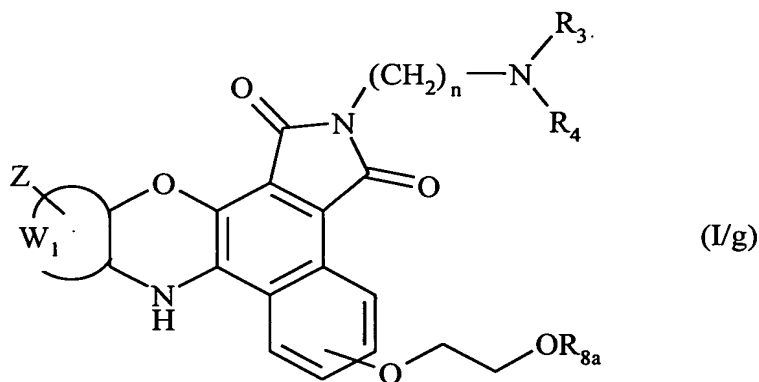


wherein G represents a leaving group and R_{8a} , which is other than a hydrogen atom, has the same definition as R_8 in formula (I), to yield a compound of formula (I/f), a particular case of the compounds of formula (I):



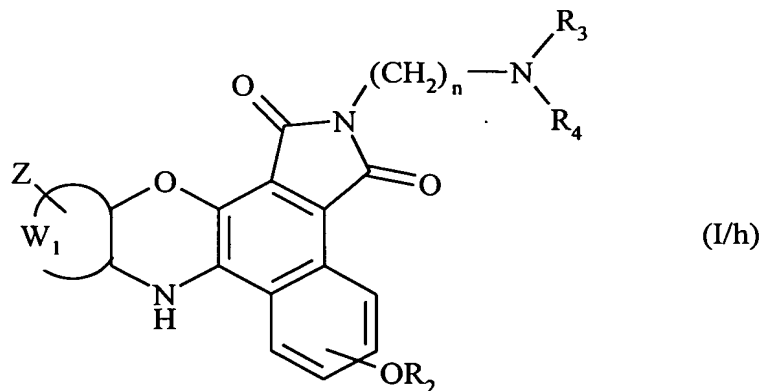
wherein P_G , R_3 , R_4 , R_{8a} , W_1 , Z and n are as defined hereinbefore,

the amine function of which compounds of formula (I/f) is optionally deprotected according to conventional methods of organic synthesis to yield a compound of formula (I/g), a particular case of the compounds of formula (I) :



wherein R_3 , R_4 , R_{8a} , W_1 , Z and n are as defined hereinbefore,

the compounds of formulae (I/b), (I/d) and (I/g) constituting the compounds of formula (I/h) :

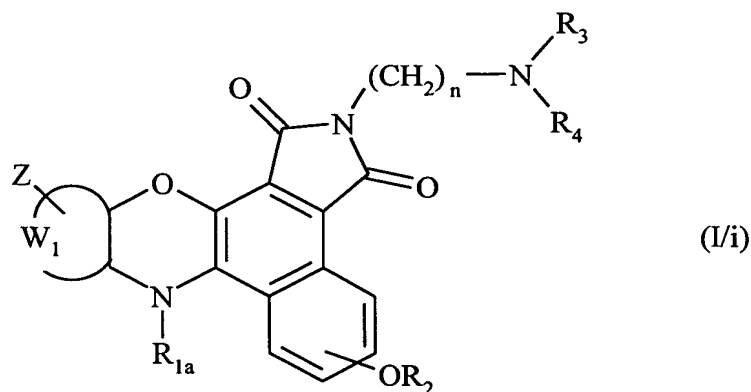


wherein R_2 , R_3 , R_4 , W_1 , Z and n are as defined hereinbefore,

which compounds of formula (I/h) are optionally subjected to the action of a compound of formula (XVI) :

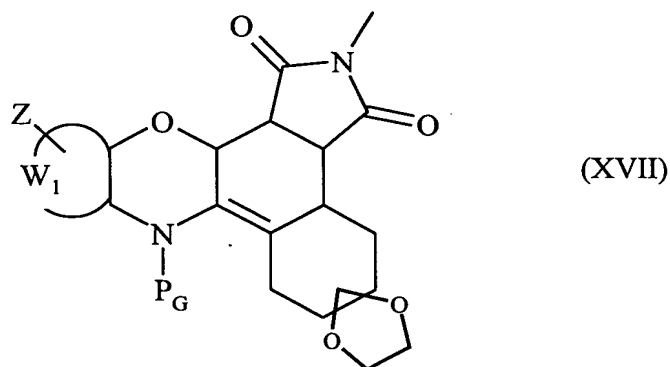


wherein R_{1a} , which is other than a hydrogen atom, has the same definition as R_1 in formula (I) and G is as defined hereinbefore, to yield a compound of formula (I/i), a particular case of the compounds of formula (I) :



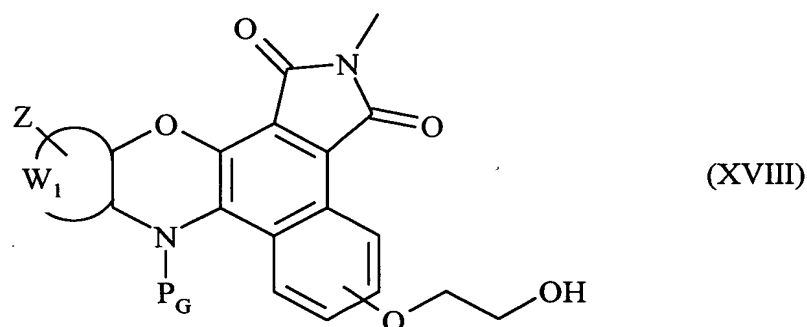
wherein R_{1a} , R_2 , R_3 , R_4 , W_1 , Z and n are as defined hereinbefore,

- or treated with N-methylmaleimide to yield a compound of formula (XVII) :



wherein P_G , W_1 and Z are as defined hereinbefore,

which compound of formula (XVII) is subjected to the same reaction conditions as the compound of formula (VII) to yield a compound of formula (XVIII) :



wherein P_G , W_1 and Z are as defined hereinbefore,

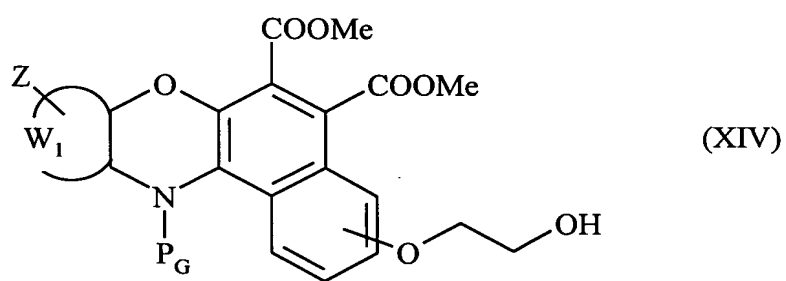
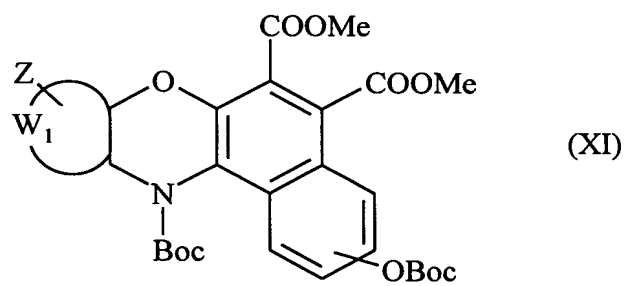
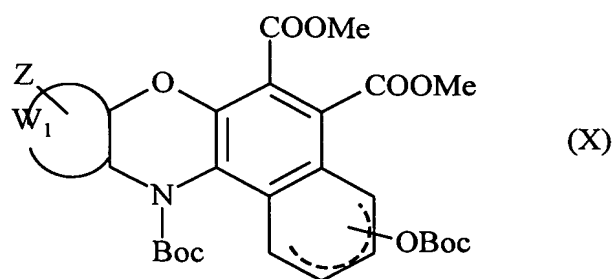
which compound of formula (XVIII) is subjected to the same reaction conditions as the compound of formula (XII) to yield a compound of formula (I/d) as described hereinbefore,

the compounds of formulae (I/a) to (I/i) constituting the totality of the compounds of formula (I), which compounds are optionally purified according to conventional purification techniques, may, if desired, be separated into their different isomers according to a conventional separation technique and are, if desired, converted into their N-oxides and, optionally, into addition salts with a pharmaceutically acceptable acid or base.

12. Pharmaceutical compositions comprising as active ingredient at least one compound of formula (I) according to any one of claims 1 to 10, on its own or in combination with one or more pharmaceutically acceptable inert, non-toxic excipients or carriers.

13. Pharmaceutical compositions according to claim 12, for use as medicaments in the treatment of cancers.

14. Compounds of formula (X), (XI) and (XIV) :



for use as synthesis intermediates of compounds of formula (I).